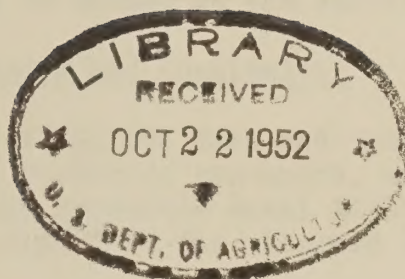


3
POWER REQUIREMENT STUDY:

0 PANHANDLE RURAL ELECTRIC MEMBERSHIP ASSOCIATION

NEBRASKA 84 GRANT

(Revised)



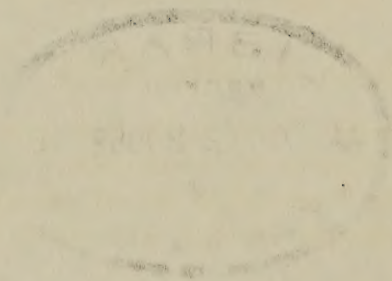
2 U.S.
Prepared by
Program Analyst
Office of the Administrator
RURAL ELECTRIFICATION ADMINISTRATION

50
August 1952

FOR THE DEPARTMENT OF
THE ARMY
WASHINGTON, D. C.

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WASHINGTON, D. C.

NOV 1918

POWER REQUIREMENT STUDY 1/

NEBRASKA 84 GRANT

(Revised)

Foreword

This study has been prepared by the Rural Electrification Administration for use in determining the present and estimated future power requirements of the Panhandle Rural Electric Membership Association (Nebraska 84 Grant).

The estimates of future loads contained in the study have been arrived at from a field survey in the Cooperative's area and from basic data obtained in the Cooperative's office. The estimates of kwh consumption for farm, nonfarm and town residential consumers used herein are based upon a projection of historical trends in consumption, type of farm, income, competitive sources of energy, and other economic factors which are believed to have a bearing on the future use of electricity in this area.

The estimates of average unit kilowatt demands per consumer at peak load, corresponding to the estimated average kilowatt-hour consumption per member per month of farm, nonfarm and small commercial consumers, have been derived from the curve "Maximum Demand at Substation" accompanying Engineering Memorandum No. 94R5 of the Engineering Division, REA, dated August 21, 1950. The total number of consumers to be served in each substation area, rather than the number of consumers in a particular class, was used as a basis in arriving at the total and unit demands in order to reflect the probable overall diversity between classes of consumers in a given substation area. No adjustment for a power factor less than unity was applied, it being assumed for estimating purposes that the KVA demand as read from the curve was equal to the KW demand at the substation.

Summary and Conclusions

Pertinent information reflecting the data and conclusions arrived at regarding the present and future number of consumers, kilowatt-hour requirements, and kilowatt demands for the Panhandle Rural Electric Membership Association (Nebraska 84 Grant) are included in the attached Tables I to III, inclusive.

Table III (Estimate of Loads) indicates that approximately 1,359 consumers will be served by the Cooperative in 1954, 1,534 in 1957, and 1,584 in 1962, at an estimated maximum demand at substation of 1,848 kilowatts in 1954, 2,562 kilowatts in 1957, and 3,318 kilowatts in 1962. Likewise, it is estimated that the Cooperative's annual energy requirements at substations will approximate 6.3 million kilowatt-hours in 1954, 8.4 million kilowatt-hours in 1957, and 10.4 million kilowatt-hours in 1962.

1/ Based on a field survey conducted by Frank G. Coover, Field Representative, Office of the Administrator, REA and W. M. Letcher, Field Representative, REA, USDA.

The degree of attainment of area coverage by the Cooperative, as well as the achievement of the estimated kilowatt-hour consumption foreseen in this report, are contingent on the following important considerations:

1. An adequate, dependable source of low-cost power supply.
2. Dependable, adequate electrical power to the ultimate consumer with a minimum of interruption in service and at the lowest retail rate commensurate with "pay out" considerations.
3. A fully prosecuted power use program designed to attain the goals of saturation of appliances and farm equipment reflected by the estimates included in this report.

E. C. Weitzell,
Program Analyst

COMPARATIVE ANNUAL OPERATING DATA ON CONSUMERS AND AVERAGE MONTHLY CONSUMPTION

NEBRASKA 84 GRANT (REV. 3)

(CONT'D.)

YEAR	FARM			NONFARM RESIDENTIAL			SMALL COMMERCIAL			TOWN RESIDENTIAL		
	MEMBERS NO.	AVERAGE		MEMBERS NO.	AVERAGE		MEMBERS NO.	AVERAGE		MEMBERS NO.	AVERAGE	
		KWH/MO.	% INCR.		KWH/MO.	% INCR.		KWH/MO.	% INCR.		KWH/MO.	% INCR.
1949	238	168	--	1	53	--	57	306	--	162	100	--
1950	375	221	31.5	18	13	-75.5	80	297	-2.9	223	97	-3.0
1951	607	262	18.6	38	66	407.7	99	270	-9.1	254	112	15.5
1952 1/	679	315	--	5	36	--	140	199	--	302	122	--
SUM OF YEARLY % INCR.												
61949 - 1951)												
AVERAGE PER YEAR												
50.1												
25.0												
332.2												
166.1												
-12.0												
-6.0												
12.5												
6.2												

1/1 SIX MONTHS ONLY

NOTE: CONTINUED ON NEXT PAGE.

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TABLE I (CONT'D.)

COMPARATIVE ANNUAL OPERATING DATA ON CONSUMERS
AND AVERAGE MONTHLY CONSUMPTION

NEBRASKA 84 GRANT (REV.)

YEAR	STREET LIGHTING			LG. COMMER. & IRRIG.			TOTAL		
	MEMBERS	AVERAGE		MEMBERS	AVERAGE		MEMBERS	AVERAGE	
	NO.	KWH/MO.	% INCR.	NO.	KWH/MO.	% INCR.	NO.	KWH/MO.	% INCR.
1949	1	1,343	--	--	--	--	459	163	--
1950	1	2,136	59.0	1	1,865	--	691	189	16.0
1951	1	1,144	-46.4	3	4,918	163.7	1,001	225	19.0
1952 <u>1/</u>	1	1,400	--	3	3,037	--	1,131	285	--
SUM OF YEARLY % INCR.									
(1949 - 1951)		12.6				163.7		35.0	
AVERAGE PER YEAR		6.3				163.7		17.5	

1/ SIX MONTHS ONLY.

PROGRAM ANALYST, OFFICE OF THE
ADMINISTRATOR, REA - AUG. 1952

TABLE II

COMPARATIVE ANNUAL OPERATING DATA ON ENERGY REQUIREMENTS

NEBRASKA 84 GRANT (REV.)											
YEAR	ENERGY PURCHASED		ENERGY SOLD		ENERGY LOSSES		MAXIMUM KW DEMAND	TOTAL SERVICES CONNECTED	TOTAL MILES ENERGIZED	OVERALL CONSUMER DENSITY	AVERAGE COST PER KWH
	KWH	% INCR.	KWH	% INCR.	KWH	% LOSS					
1948 1/	311,558	--	278,805	--	32,753	10.5	*	270	125	2.16	\$.04682
1949	1,081,956	--	900,535	--	181,421	16.8	*	632	400	1.58	.02396
1950	1,879,998	73.8	1,571,495	74.5	308,503	16.4	*	894	886	1.01	.01802
1951	3,380,754	79.8	2,702,424	72.0	678,330	20.1	*	1,088	890	1.22	.00983
1952 2/	2,121,000	--	1,733,363	--	387,637	18.3	958	1,182	1,277	0.93	.00710
SUM OF YEARLY %INCR.											
(1949 - 1951)											
AVERAGE PER YEAR											
159.6											
76.8											
18.1											

TABLE III

ESTIMATE OF LOADS - ALLIANCE METERING POINT

NEBRASKA 84 GRANT (REV.)	TYPE OF CONSUMER	NUMBER OF CONSUMERS			KW DEMAND			ANNUAL KWH REQUIREMENTS		
		1954	1957	1962	1954	1957	1962	1954	1957	1962
	FARM (1)	400	410	425	@1.032	@1.243	@1.621	@3600	@4500	@6000
	FARM (2)	485	635	650	@1.398	@1.468	@1.621	1,440,000	1,845,000	2,550,000
	NONFARM (RES)	5	5	5	@0.174	@0.213	@0.253	@5040	@5400	@6000
	SMALL COMMERCIAL	80	80	80	@1.260	@1.318	@1.468	2,444,400	3,429,000	3,900,000
	PUBLIC BUILDINGS	65	65	65	@0.174	@0.213	@0.253	@480	@600	@720
	TOWN RESIDENTIAL	305	305	305	@0.550	@0.601	@0.722	2,400	3,000	3,600
	IRRIGATION (30 HP)	15	30	50	@30/1.10DF	@30/1.2DF	@30/1.3DF	@4500	@4800	@5400
	STREET LIGHTING	2	2	2	@7/1.0DF	@7/1.0DF	@7/1.0DF	360,000	39,000	46,800
	WATER PUMPS (HYANNIS)	2	2	2	@40/1.5DF	@40/1.5DF	@40/1.5DF	@1680	@1920	@2400
	SUB-TOTAL							5,216,400	7,005,600	8,792,400
	PLUS DIST. LOSSES (APPROX.)							@18%	@17%	@16%
	TOTAL	1,359	1,534	1,584	1,848	2,562	3,318	1,144,600	1,434,400	1,674,600
								6,361,000	8,440,000	10,467,000

(1) PLEDGED MINIMUMS UP TO \$10.50 PER MONTH.

(2) PLEDGED MINIMUMS ABOVE \$10.50 PER MONTH.

ANNUAL LOAD FACTOR -

39.3%

37.6%

36.0%

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